

CLAIMS

1. A process for the manufacture of a crystalline molecular sieve containing phosphorus in its framework, which process
5 comprises treating a synthesis mixture comprising elements necessary to form the phosphorus-containing molecular sieve and colloidal crystalline molecular sieve seeds for a time and at a temperature appropriate to form the desired molecular sieve.

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2. A process as claimed in claim 1, wherein the phosphorus-containing molecular sieve is an aluminophosphate or a silica-aluminophosphate, optionally containing other elements.

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3. A process as claimed in claim 1 or claim 2, wherein the phosphorus-containing molecular sieve is of the CHA or LEV structure type.

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4. A process as claimed in claim 1 or claim 2, wherein the phosphorus-containing molecular sieve is SAPO-34.

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5. A process as claimed in claim 4, wherein the percentage area contribution of Broensted acid sites to the total OH area in the IR spectrum is at least 30%.

6. A process as claimed in claim 5, wherein the said contribution is at least 50%.

30 7. A process as claimed in any one of claims 4 to 6, wherein the SAPO-34 is Ni-SAPO-34.

8. A process as claimed in any one of claims 1 to 7, wherein the seeds are of structure type LEV, OFF, or CHA.

9. A process as claimed in any one of claims 1 to 7, wherein the seeds are of Levyne, ZSM-45, Chabasite, Offretite, or SAPO-34.

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10. A process as claimed in any one of claims 1 to 9, wherein the seeds are present in a proportion within the range of 1 to 2000 ppm, based on the total weight of the synthesis mixture.

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11. A process as claimed in claim 10, wherein the proportion is within the range of from 100 to 1500 ppm.

12. A process as claimed in claim 10, wherein the proportion 15 is within the range of from 100 to 250 ppm.

13. A process as claimed in any one of claims 1 to 12, wherein the seeds are incorporated in the synthesis mixture in the form of a suspension.

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14. A process as claimed in any one of claims 1 to 13, wherein the particle size of the seeds is within the range of from 5 to 1000 nm.

25 15. A process as claimed in claim 14, wherein the particle size is within the range of from 10 to 300 nm.

16. A process as claimed in claim 14, wherein the particle size is within the range of from 20 to 100 nm.

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17. A process as claimed in any one of claims 1 to 16, wherein the phosphorus-containing molecular sieve is of a first structure type and the seeds are of a second structure type.

18. A process as claimed in claim 17, wherein the first structure type is CHA and the second structure type is LEV.

5 19. A molecular sieve whenever produced by a process as claimed in any one of claims 1 to 18.

10 20. SAPO-34 in which the percentage area contribution of Broensted acid sites to the total OH area in the IR spectrum is at least 30%, obtainable by a process as claimed in any one of claims 1 to 18.

15 21. A molecular sieve as claimed in claim 19 or claim 20, in particulate or layer form.

22. A process for the conversion of an oxygenate to olefins which comprises contacting the oxygenate under catalytic conversion conditions with a molecular sieve as defined in any one of claims 19 to 21.

20 23. The use of the molecular sieve as claimed in any one of claims 19 to 21, if desired after washing, cation exchange, or calcining, in hydrocarbon conversion, adsorption, or separation.

25 24. The use, in the synthesis of a phosphorus-containing crystalline molecular sieve of colloidal crystalline molecular sieve seed crystals to control the particle size of the product, or to accelerate the formation of the product, 30 or both to control the particle size and accelerate the formation of the product.